CLAIMS

We claim:

1. A method comprising:
   a. forming an article comprising a layer comprising a known concentration and a substantially uniform distribution of fluorophores;
   b. exposing the layer to electromagnetic radiation to create a fluorescent signal;
   c. measuring the fluorescent signal to determine the thickness of the layer.
2. The method according to claim 1, wherein the article comprises a film.
3. The method according to claim 1, wherein the article comprises a preform.
4. The method according to claim 1, 2, or 3 wherein the layer further comprises at least one polymer composition.
5. The method according to claim 1, 2, or 3, wherein the article further comprises at least one additional layer.
6. The method according to claim 4, wherein the article is formed by a process selected from the group consisting of extrusion, co-extrusion, injection blow molding, co-injection blow molding, extrusion blow molding, co-extrusion blow molding, stretch blow molding, solution coating, spin blowing, lamination processes, injection molding, co-injection molding, and combinations thereof.
7. The method according to claim 4 wherein the polymer composition is selected from the group consisting of polyesters, polyolefins, vinyl polymers, polycarbonates, polyurethanes, polysulfones, polyethers, polyacetals, polyacrylates, polyamides, polyimides, polyester-amides, polystyrenes, copolymers thereof, and non-polymeric waxes.

8. The method according to claim 5, wherein the additional layers independently comprise at least one material selected from the group consisting of polyesters, polyolefins, vinyl polymers, polycarbonates, polyurethanes, polysulfones, polyethers, polyacetals, polyacrylates, polyamides, polyimides, polyester-amides, polystyrenes, copolymers thereof, and non-polymeric waxes.

9. The method according to claim 4, wherein the fluorophores comprise at least one material selected from the group consisting of phthalocyanines, naphthalocyanines, squaraines, carbocyanines, zethrens, coumarins, imonocoumarins, carbostyrils, aminophthalimides, quinolines, quinoxalines, distyrylarenes, benzanthrones, naphthalimides, aminoketones, lactones, anthrapyridones, benzopyrans, thioindigoids, anthraquinones, perylenes, and stilbenes.

10. The method according to claim 4, wherein the electromagnetic radiation is in a wavelength range consisting of near infrared, ultraviolet, and visible.

11. The method according to claim 4, wherein the exposing and measuring occur on-line immediately following or simultaneously with the forming of the article.

12. The method according to claim 1, wherein the article comprises a container.

13. The method according to claim 3, further comprising making a container from the preform.

14. The method according to claim 4, wherein the layer comprises at least one polyamide.

15. The method according to claim 14, wherein the layer further comprises passive and/or active barrier enhancing compounds.

16. The method according to claim 15, wherein said passive barrier enhancing compounds comprise dispersed platelet particles and said active barrier enhancing compounds comprise oxygen scavenging compounds.

17. The method according to claim 5, wherein the thickness of the at least one additional layer is also determined according to the method of claim 5.

18. A method comprising:
   - a. forming an article comprising a layer comprising a known concentration and a substantially uniform distribution of fluorophores;
   - b. exposing the layer to electromagnetic radiation to create a fluorescent signal;
   - c. measuring the fluorescent signal to determine non-uniformity of thickness of the layer.

19. The method according to claim 18, wherein the article comprises a film.

20. The method according to claim 18, wherein the article comprises a preform.

21. The method according to claim 18, 19, or 20, wherein the layer further comprises at least one polymer composition.

22. The method according to claim 18, 19, or 20, wherein the article further comprises at least one additional layer.

23. The method according to claim 21, wherein the article is formed by a process selected from the group consisting of extrusion, co-extrusion, injection blow molding, co-injection blow molding, extrusion blow molding, co-extrusion blow molding, stretch blow molding, solution coating, spin blowing, lamination processes, injection molding, co-injection molding, and combinations thereof.

24. The method according to claim 21, wherein the layer comprises at least one material selected from the group consisting of polyesters, polyolefins, vinyl polymers, polycarbonates, polyurethanes, polysulfones, polyethers, polyacetals, polyacrylates, polyamides, polyimides, polyester-amides, polystyrenes, copolymers thereof, and non-polymeric waxes.

25. The method according to claim 22, wherein the additional layers independently comprise at least one material selected from the group consisting of polyesters, polyolefins, vinyl polymers, polycarbonates, polyurethanes, polysulfones, polyethers, polyacetals, polyacrylates, polyamides, polyimides, polyester-amides, polystyrenes, copolymers thereof, and non-polymeric waxes.

26. The method according to claim 21, wherein the fluorophores comprise at least one material selected from the group consisting of phthalocyanines, naphthalocyanines, squaraines, carbocyanines, zethrens, coumarins, imonocoumarins, carbostyrils, aminophthalimides, quinolines, quinoxalines, distyrylarenes, benzanthrones, naphthalimides, aminoketones, lactones, anthrapyridones, benzopyrans, thioindigoids, anthraquinones, perylenes, and stilbenes.

27. The method according to claim 21, wherein the electromagnetic radiation is in a wavelength range consisting of near infrared, ultraviolet, and visible.

28. The method according to claim 21, wherein the exposing and measuring occur on-line immediately following or simultaneously with the forming of the article.

29. The method according to claim 18, wherein the article comprises a container.

30. The method according to claim 20, further comprising making a container from the preform.

31. The method according to claim 22, wherein at least one additional layer comprises a known concentration and a substantially uniform distribution of at least one second fluorophore different from the fluorophore in the layer, further comprising the steps of exposing the additional layer to electromagnetic radiation to create a fluorescent signal; and measuring the fluorescent signal to determine thickness of the additional layer.

32. A method for making an article comprising a layer comprising a known concentration and a substantially uniform distribution of fluorophores, the method comprising:

a. exposing the layer to electromagnetic radiation to create a fluorescent signal;

b. measuring the fluorescent signal; and

c. using the fluorescent signal to control the thickness of the layer.